Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) A signal transmitting apparatus for ~~sending and receiving~~ communicating a plurality of digital input signals ~~input to said signal transmitting apparatus~~ through a single signal line, said signal transmitting apparatus comprising:

a sending part for converting an amplitude of each [[width]] of the plurality of digital input signals into a weighted voltage in accordance with a predetermined weight, and generating a send signal by adding the weighted voltages converted from the plurality of digital input signals, and outputting the send signal; and

a receiving part for receiving the send signal from the sending part, comparing the send signal with a plurality of predetermined reference voltages, generating ~~each of the~~ a plurality of digital output signals corresponding to the plurality of digital input signals, based on the send signal, and outputting said [[each]] plurality of the digital [[input]] output signals.

2. (currently amended) The signal transmitting apparatus as claimed in claim 1, wherein said sending part includes input resistances, of which number is a same number as the digital signals, and an inversion amplifying circuit formed by an operational amplifier, and

wherein a resistance value of each of the input resistances connecting to the inverting input ~~terminals~~ terminal of the operational amplifier is set ~~to correspond to a weight of said each width~~ so that the amplitudes of each of the digital input signals are converted into the weighted voltages, in accordance with the predetermined weight.

3. (original) The signal transmitting apparatus as claimed in claim 2, wherein a combined resistance value in a case of connecting the input resistances in series is approximately equal to a feedback resistance value of the operational amplifier.

4. (original) The signal transmitting apparatus as claimed in claim 2, wherein the resistance value of each of the input resistances is weighted by a multiple of two.

5. (original) The signal transmitting apparatus as claimed in claim 2, wherein a voltage of a non-inverting input terminal of the operational amplifier is set to be approximately half a power voltage.

6. (currently amended) The signal transmitting apparatus as claimed in claim 1, wherein said receiving part includes:

a reference voltage generating circuit for generating [[a]] the plurality of predetermined reference voltages;

a voltage comparing circuit for comparing each of the plurality of predetermined reference ~~values~~ voltages with [[a]] the send signal received from said sending part, and outputting a ~~signal~~ plurality of comparison signals showing each comparison result; and

a logic circuit for synthesizing each digital [[input]] output signal ~~from each output signal~~ based on the plurality of comparison signals of said voltage comparing circuit in accordance with a predetermined method,

wherein said reference voltage generating circuit generates each of the plurality of

predetermined reference voltages, of which number is resulted from multiplying a number of the digital input signals by two and subtracting one, and outputs said each of the plurality of predetermined reference voltages.

7. (original) The signal transmitting apparatus as claimed in claim 6, wherein in a case of two digital input signals, in response to an output signal from said voltage comparing circuit for detecting one digital input signal which weight is greater than another digital input signal, said logic circuit cancels one of the output signals from the voltage comparing circuit for detecting another digital input signal.

8. (original) The signal transmitting apparatus as claimed in claim 1, wherein said sending part adds the voltages being converted while a digital input signal having a greatest weight in the digital input signals is a predetermined signal level.

9. (currently amended) The signal transmitting apparatus as claimed in claim 8, wherein said sending part includes:

a plurality of switching circuits each being controlled by ~~each respective~~ one of the plurality of digital input ~~signal~~ signals; and

a plurality of load resistances each being connected to [[each]] one of the plurality of switching ~~circuit~~ circuits in series,

wherein [[one]] a first load resistance connected to [[one]] a first switching circuit, which is controlled by [[one]] a first digital input signal having a greatest weight, is connected between a predetermined voltage and the ~~relative~~ first switching circuit, and a series circuit for

[[other]] a second switching ~~circuits~~ circuit and ~~relative resistances~~ a corresponding second load resistance is connected to the [[one]] first switching circuit, which is controlled by the [[one]] first digital input signal having the greatest weight, in parallel.

10. (currently amended) The signal transmitting apparatus as claimed in claim 9, wherein the [[one]] first load resistance connected to the [[one]] first switching circuit, which is controlled by the [[one]] first digital input signal having the greatest weight, is set to be the same resistance value as a combined resistance value when the other load resistances are connected in parallel.

11. (currently amended) The signal transmitting apparatus as claimed in claim 1, wherein said receiving part includes:

a reference voltage generating circuit for generating and outputting each of [[a]] the plurality of predetermined reference voltages;

a voltage comparing circuit for comparing each of the plurality of predetermined reference voltages and [[a]] the send signal received from said sending part, and outputting a ~~signal~~ plurality of comparison signals showing each comparison result; and

a logic circuit for synthesizing each of the digital [[input]] output signals ~~from each output signal~~ based on the plurality of comparison signals of said voltage comparing circuit in accordance with a predetermined method.

12. (currently amended) The signal transmitting apparatus as claimed in claim 11, wherein in a case of two digital input signals, the plurality of comparison signals received from

the voltage comparing circuit are equal to the plurality of digital input signals, and said logic circuit ~~output said each output signal as each of the digital~~ directly outputs the plurality of comparison signals received from the voltage comparing circuit.

Claims 13-29 (canceled).

30. (new) The signal transmitting apparatus as claimed in claim 1, wherein the send signal is transmitted from the sending part to the receiving part, through the single signal line.

31. (new) The signal transmitting apparatus as claimed in claim 1, wherein a value of the send signal generated by adding the weighted voltages converted from the plurality of digital input signals uniquely corresponds to values of the digital inputs signals, such that said values of the digital input signals can be determined based solely on said value of the send signal.

32. (new) The signal transmitting apparatus as claimed in claim 1, wherein the receiving part determines the value of the send signal by comparing the value of the send signal with the plurality of predetermined reference voltages.

33. (new) The signal transmitting apparatus as claimed in claim 1, wherein a first weighting or first multiplication factor is used to convert a first amplitude of a first one of the digital input signals into a first weighted voltage, and

wherein a second weighting or second multiplication factor, different from the first weighting or first multiplication factor, is used to convert a second amplitude of a second one of

the digital input signals into a second weighted voltage.

34. (new) The signal transmitting apparatus as claimed in claim 2, wherein the send signal is output from an output terminal of the operation amplifier.